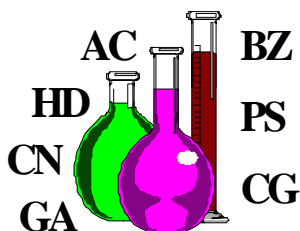


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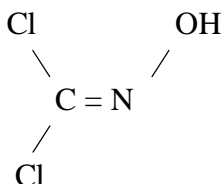


*Detailed Facts About Blister Agent Phosgene Oxime*  
(CX)

218-13-1096

*Physical Properties of Blister Agent Phosgene Oxime*

**Chemical Structure**



**Chemical Formula**

CH Cl<sub>2</sub> NOH

**Description**

CX may appear as a colorless, low-melting point (crystalline) solid or as a liquid. It has a high vapor pressure, slowly decomposes at normal temperatures; it has a disagreeable, penetrating odor.

**Molecular Weight**

113.9

**Boiling Point**

53° to 54°C

**Vapor Pressure (mm Hg)**

11.2 @ 25°C (solid)  
13 @ 40°C (liquid)

**Freezing Point**

35° to 40°C

**Density**

Liquid = no data  
Vapor = 3.9 (air = 1)

**Solubility**

Forms hydrate which is very soluble in water, (~70%)

**Volatility**

7.6 x 10<sup>4</sup> mg/m<sup>3</sup> @ 40°C

**Agent CX** - The chemical dichloroformoxime or Phosgene Oxime, Chemical Abstract Service Registry Number is not available.

### ***Toxicity Values***

Beginning irritation (12 sec)	= 0.2 mg-min/m <sup>3</sup>
Unbearable irritation (1 min)	= 3 mg-min/m <sup>3</sup>
LCt <sub>50</sub>	= 3,200 mg-min/m <sup>3</sup> (estimated)

### ***Exposure Limits***

Workplace Time-Weighted Average -	No standard available
General Population Limits -	No standard available

## ***Toxic Properties of Blister Agent Phosgene Oxime***

*CX is an urticant producing instant, almost intolerable pain and local tissue destruction immediately on contact with skin and mucous membranes. It is toxic through inhalation, skin and eye exposure, and ingestion. Its rate of detoxification in the body is unknown.*

### ***Overexposure Effects***

CX vapors are violently irritating to the eyes. Very low concentrations can cause inflammation, lacrimation, and temporary blindness; higher concentrations can cause corneal corrosion and dimming of vision. Contact with the skin can cause skin lesions of the corrosive type. It is characterized by the appearance within 30 seconds of a central blanched area surrounded by an erythematous ring. Subcutaneous edema follows in about 15 minutes. After 24 hours, the central blanched area becomes necrotic and darkened, and an eschar is formed in a few days. Healing is accompanied by sloughing of the scab; itching may be present throughout healing.

### ***Emergency and First Aid Procedures***

Inhalation: remove from the source immediately; give artificial respiration if breathing has stopped; seek medical attention immediately.

Eye Contact: flush eyes immediately with copious amounts of water; seek medical attention immediately.

Skin Contact: remove victim from the source immediately; decontaminate the skin immediately by flushing with copious amounts of water to remove any phosgene oxime which has not yet reacted with tissue; seek medical attention immediately.

Ingestion: do not induce vomiting; seek medical attention immediately.

### ***Protective Equipment***

Protective Gloves:	Wear Butyl toxicological agent protective gloves (M3, M4 or glove set).
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Eye Protection: Wear chemical goggles as a minimum; use goggles and face shield for splash hazard.

Other: Wear a complete set of protective clothing to include gloves and lab coat for general lab work; have an M9, M40, or M17 mask readily available.

### ***Reactivity Data***

Stability: Unstable in metal; store in glass or enamel-lined storage vessels.

Decomposition Rate: Half-life; gradually decomposes at reflux (129°C); decomposes on storage above -20°C.

Hydrolysis Rate: Very slow in H<sub>2</sub>O @ pH7; 5% decomposition in 6 days at room temperature; reacts violently in alkaline solution.

Hydrolysis Products: Monohydrate: H  
In hot acid: CO<sub>2</sub> [HH<sub>2</sub>OH]<sup>+</sup> Cl and HCl

Corrosive Properties: Corrosive to most metals.

***Persistence***

Soil - approximately 2 hours.  
Surface (wood, metal, masonry, rubber, paint) - relatively nonpersistent.  
Water - relatively nonpersistent.

### ***References***

1. Department of the Army Field Manual (DA FM) 3-9, *Potential Military Chemical/Biological Agents and Compounds*, 1990.
2. *The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals*, Eleventh Edition, Merck & Co., Inc., Rahway, New Jersey, 1989.
3. U.S. Army Chemical Command Materiel Destruction Agency, *Site Monitoring Concept Study*, 15 September 1993.

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